Our 1st year

Celebrating Our Achievements
June 2006-2007

Los Alamos
NATIONAL LABORATORY
EST. 1943

Contents

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SAFETY & SECURITY

Goal: Make safety and security integral to every activity we do

Safety Accomplishments

- Improved safety performance by 30 percent.
- Dropped the number of OSHA-recordable incidents from about 16/month to 11/month and about 7 injuries/month (injuries that caused time away from work) to about 4/month.
- Established a Worker Safety and Security Team to stimulate an employee-driven safety and security culture.
- Focused on every facet of safety from ergonomic issues and slips, trips, and falls to construction operations such as hosting and rigging.
- Conducted formal and rigorous investigations of accidents; such investigations enabled us to refine standards and expectations, train employees and managers to better respond to possible safety issues, and develop methods to minimize similar accident scenarios.

Security Accomplishments

- Reduced by 90 percent the number of facilities that hold strategic special nuclear materials.

- Consolidated and reduced classified materials:
  - Decreased by 30 percent the amount of accountable classified removable electronic media—we plan to reduce such media by 50 percent by December 2007.
  - Reduced by 15 percent the number of vault-type rooms where classified computing takes place and reduced by 15 percent the number of safes.
  - Accelerated the completion of the "red" computing network, which will help eliminate the need for portable electronic media.

- Conceived and began to construct a "Super Vault-Type Room," which will enable us to close existing vault-type rooms and further consolidate and reduce classified computing systems, documents, and electronic data.

- Achieved 100 percent compliance from NNSA inspectors for requirements related to enhanced port controls on classified computers.

- Strengthened training and controls:
  - Conducted extensive training of our classified workforce; such training included the introduction of the principles of Human Performance Improvement, and effective approach to continuous improvement adapted from the nuclear power industry.
  - Enhanced our substance-abuse policy and implemented a more comprehensive drug-testing program for all employees and contractors.
  - Increased the number of physical searches of personnel entering or leaving a classified area.

PRIMARY MISSION

RELIABLE NUCLEAR DETERRENCE

Goal: Assess the safety, reliability, and performance of LANL weapons systems

Producing Plutonium Pits

- Received the first "Diamond Stamp" W88 pit acceptance from NNSA for War Reserve stockpile. This delivery marks the restoration of a critical capability originally lost when the Rocky Flats plant in Colorado closed in 1989.

- Re-established a multipit manufacturing capability; we will complete 10 war-reserve pits by the end of this fiscal year.

Conducting Ground-breaking Tests at DARHT (Dual-Axis Radiographic Hydrotest Facility)

- Achieved two successful four-pulse firings of DARHT's Axis-2 accelerator; this achievement is a major step toward producing three-dimensional multiframe radiographs of crucial experiments.

- Fired for the first time a fully contained high-explosive experiment inside a shell containment vessel. This test marks the beginning of fully contained tests at DARHT.

Acquiring a Faster Supercomputer

- Installed a first phase of the Roadrunner supercomputer, which presently operates at more than 70 teraflops on our classified network. Roadrunner is in a race to become the world's first system to achieve a sustained petaflop—one million billion calculations per second.

Conducting Subcritical Experiments

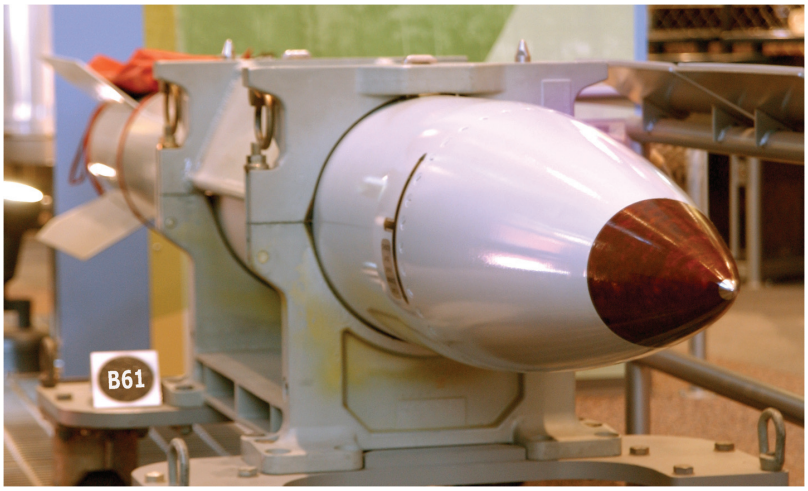
- Completed Unicorn, a key subcritical nuclear materials test capability that provides data to help us certify the performance of the W88 and other weapons systems.

- Completed a series of "Thermos" experiments designed to test the response of plutonium as a metal under the extreme conditions that exist within weapons systems.

Extending the Life of Existing Weapons

- Worked closely with the U.S. Navy and the Y-12 plant to meet W76 Life Extension Program commitments

- Led to completion a six-year effort to deliver the first refurbished B61 bombs. In January 2006, the first production units for the B61 Modification-7 were delivered; in January 2007, B61 Modification-11 bombs were delivered. This collaborative team extended the lifetimes of these units by approximately 20 years and ensured that national defense requirements were met without conducting underground nuclear tests.



THREAT REDUCTION

Goal: Leverage our science and technology advantage to anticipate, counter, and defeat global threats and meet national priorities, including energy security

Addressing the North Korean Nuclear Threat

- Assembled an internal committee of subject-matter experts to assess the current state of information and evaluate further analytical actions staff could take in the event of a test. Since North Korea's nuclear test on October 9, 2006, this committee has provided input to the national intelligence community.

- Worked with a high-level U.S. delegation in Beijing. In March 2006, this delegation met with the Denuclearization of the Koran Peninsula Working Group and attended the first session of the Sixth Round of Six-Party talks designed to address the North Korean nuclear program. Delegations attending included China, Russia, Japan, South Korea, and North Korea.

The New York Times

Preliminary Samples Point to North Korean Nuclear Test

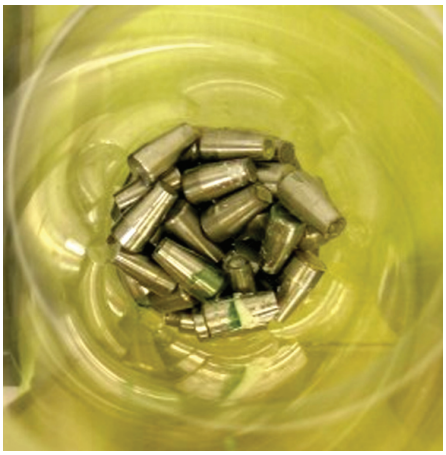
October 14, 2006, Saturday
By MARK MAZZETTI (NYT); Foreign Desk

Seoul - US intelligence officials say they have found new evidence that North Korea detonated nuclear bomb inside mountain in its desolate northern territory; national intelligence dir John D Negroponte's office says analysis of air samples taken in region found radioactive material that is consistent with nuclear test

Defeating IEDs (Improvised Explosive Devices)

- Developed numerous techniques to defeat IEDs. Technology development covers intelligence gathering and analysis (such as developing unique Lanthanides to "fingerprint" explosives for forensic purposes), detection (such as nuclear magnetic resonance devices to detect liquid explosives), and countering (such as reversible barriers that are quickly deployed to resist chemicals and fire and withstand attacks from vehicles, battering rams, and amassed groups of terrorists).

Recovering Radioactive Material



- Recovered more than 15,000 radioactive sources from around the country; moreover, a significant international expansion of recovery efforts is underway. This effort is designed to minimize the chances of such sources being used in "dirty bombs" by terrorists or other criminals.

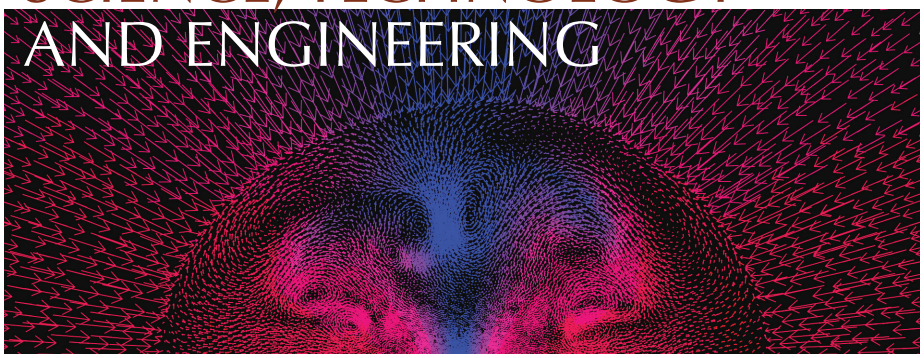
Venturing into Space

- Developed and built the small-but-smart Cibola Flight Experiment, which was launched on March 9 aboard an Atlas-V rocket and successfully achieved orbit 350 miles above the Earth.

- Developed and built GRaND (Gamma Ray and Neutron Detector), which will be launched aboard NASA's Dawn spacecraft on June 20, 2007. GRaND will be used to help determine how the asteroids in the asteroid belt evolved by generating maps of where key elements were found and in what abundance.

- Used satellite-borne experiments already in space to better understand ionospheric weather, as well as to develop a predictive capability to determine the effects of weather on communications, astronaut safety, and other critical space operations.

SCIENCE, TECHNOLOGY AND ENGINEERING



Goal: Be the premier national security science laboratory and realize our vision for a capabilities-based organization

- Won five awards in *R&D Magazine's* annual R&D 100 competition for 2006. Technologies that received awards were Green Primaries (environmentally friendly explosives), PixelVizion (an NPU-embedded visualization accelerator for large data sets), Trident (high-level language compiler that supports floating-point data types and operation), MICHELLE (software tool for thee-dimensional modeling of charge-particular beam devices), and ENABLE (energetic neutral atom beam lithography/epitaxy).

- Honored with numerous prestigious staff awards, including two E. O. Lawrence Awards (Malcolm Andrews for National Security and My Hang V. Huynh for Chemistry—Green Primaries), 17 Scientific Society Fellows, and four Early Career Awards.

- Opened the Center for the Integration of Nanotechnologies, an advanced user facility developed in conjunction with Sandia National Laboratories.

- Increased the production of medical radioisotopes at LANSCE to ensure that the demand for such isotopes was met.

- Developed the world's first mathematical model of how the hepatitis C virus replicates itself in human liver cells. This model, developed with colleagues from Rockefeller University, will help researchers better understand the dynamics of replication, as well as the mechanisms of drugs used to treat this disease.

- Led a scientific team that discovered that more than an individual's immune response drives HIV variation in the human population. These findings demonstrate that the evolution of HIV infection is more complex than originally thought.

- Worked with the Santa Fe Institute, Arizona State University, and Germany's Dresden's University of Technology to conduct a computational model study of universal scaling laws to the social organization and dynamics of urbanization. The results of this study could change the way social planners think of cities and their growth, thus influencing urban-planning efforts around the world.

- Completed the 100th genomic sequence: the genetic code of the bacterium Shewanella baltica OS185. Working with the Department of Energy's Joint Genome Institute, our scientists found and eliminated gaps in sections of genetic code that were not initially sequenced correctly by automated sequencing methods.

- Designed a sophisticated device no bigger than a deck of cards that is designed to detect influenza at its earliest stages. This device can also detect other illnesses that produce flu-like symptoms, such as respiratory syncytial virus (RSV), severe acute respiratory syndrome (SARS), and the common cold virus.

- Developed a highly promising fiber-optic probe for real-time, noninvasive diagnosis of cervical cancer.

- Invented a new class of hydrogen fuel-cell catalysts that exhibit promising activity and stability. These composite catalysts are inexpensive and durable, making them possible replacement candidates for the platinum materials currently used in fuel cells.

- Completed the construction of the 100-Tesla Multishot Magnet, the world's most powerful pulsed and nondestructive magnet.

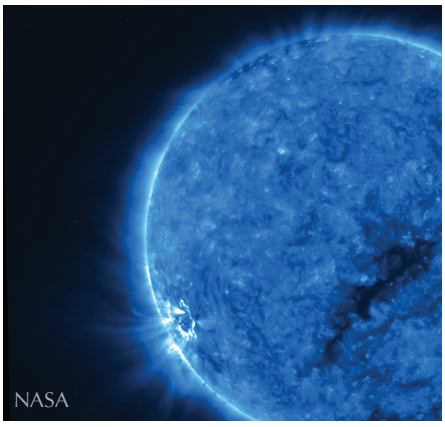
- Demonstrated unconditionally secure quantum key distribution over a record-setting 107 kilometers of optical fiber. We conducted this work in collaboration with the National Institute of Standards and Technology. This milestone marks a significant step toward enabling communication with an unprecedented level of security over long lengths of optical fiber, perhaps up to and even in excess of 250 kilometers.

- Worked with the aeronautics industry to test electronic components at our Weapons Neutron Research facility at LANSCE. One hour of testing at this facility is equivalent to 100 years of aircraft operation at high altitudes.

- Improved a type of generator that is increasingly replacing older, less efficient electrical generators used in power plants. In collaboration with General Electric Corporation, we fabricated and tested a new type of crank-shaped rotating heat pipe that cools the rotors of high-temperature superconducting electric generators.

- Delivered two of 12 instruments as part of the NNSA's Nuclear Detection System Satellite Payloads. The Combined X -ray Detector/Radiation Dosimeter and Burst Detection Verification Instruments will be used for nuclear nonproliferation treaty monitoring.

- Discovered that helium may be the drag that slows the solar wind in its million-mile-per-hour rush across the cosmos. This discovery was part of the analysis we conducted on a decade's worth of data collect by the Solar Wind Experiment, which is onboard NASA's Wind spacecraft. We share responsibility for Wind's scientific interpretation with NASA's Goddard Space Flight Center, University of New Hampshire, and Massachusetts Institute of Technology.



ENVIRONMENTAL STEWARDSHIP

Goal: Establish excellence in environmental stewardship

- Accelerated shipments of transuranic waste to the Department of Energy's Waste Isolation Pilot Plant near Carlsbad. To reduce environmental risk, we shipped 10 percent more curies (a measure of radioactivity) of transuranic waste offsite than in all prior years combined. With the imminent reopening of a key waste repackaging facility, we are poised to exceed this performance dramatically.

- Reduced the number of wastewater outfalls from 141 to 16. We are building on this effort by refurbishing the Sanitary Effluent Reclamation Facility, our primary sanitary wastewater treatment facility. This facility will recycle wastewater for use as industrial cooling water. The Laboratory's ultimate goal is zero liquid discharges to the environment.

- Completed our initial investigation of groundwater contamination from historic discharges of chromium-based corrosion inhibitors. Working closely with the New Mexico Environment Department, we used a conceptual model to determine locations for environmental monitoring.

- Won seven NNSA Pollution Prevention awards this year. This is the second year running that we have received more awards that any other site in the NNSA complex. Costs savings associated with these seven efforts total $8.2 million, nearly double last year's savings of 4.4 million.

- Involved almost every employee in environmental awareness training, which is part of our recertification of Environmental Management Systems ISO 14001. This effort led to a number of improvements, such as
  - cleaning out and disposing of (including recycling) nearly 7,000 chemicals,
  - conducting large-scale cleanouts of unneeded equipment and materials,
  - developing new procurement procedures that minimize waste, and
  - implementing more rigorous environmental requirements for our subcontractors.

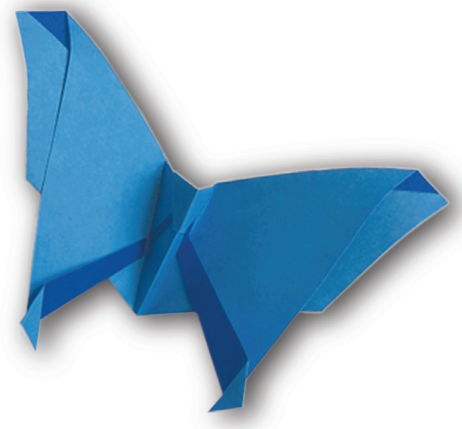
IMPROVED ACCOUNTABILITY AND ENHANCED BUSINESS SYSTEMS

Goal: Implement a performance-based management system that drives mission and operational excellence

Contractor Assurance

- Implemented the Contractor Assurance System, which is designed to improve mission delivery, reduce risk, and enhance performance Labwide.
- Developed 12 Labwide goals with associated and measurable commitments. We also conducted more than 200 assessments and established 26 Managements Review Boards.
- Implemented the Laboratory "Dashboard," a tool designed to assist managers and employees with workplace performance and continuous improvement efforts.
- Sponsored awareness training in the process improvement discipline known as Lean Six Sigma. To date more than 1,000 managers and employees have taken this training.

Goal: Deliver improved business processes, systems, and tools that meet the needs of our employees, reduce the cost of doing business, and improve the Laboratory's mission performance



Business Systems

- Saved more than $227,000 by using a reverse (or "E-auction") process to purchase selected goods and services.
- Completed the Enterprise Project, which delivered improved business practices, systems, and tools to meet employee needs, reduce the cost of doing business, and improve our mission performance.

- Relocated more than 30,000 cubic feet of official Laboratory records to the NSSB. The reason for this move was to provide a safer environmental for official Laboratory records.

- Reduced cost and improved efficiencies of online travel booking and expense reporting by contracting with Concur Technologies, a recognized industry leader. This new system is being piloted in the Experimental Physical Sciences Directorate, with Labwide implementation expected by the end of the 2007 fiscal year.

- Implemented the Subcontractor Technical Representative Program, which improves the performance of subcontractors in the areas of safety, security, cost, and schedule by providing requests for proposals that are clearer and more concise. Our requests for proposals also describe our expectations of companies who provide goods and services.

- Began the Compensation Program Design Project to achieve a competitive and market-based compensation program. The end goal of this effort is to attract and retain top talent.

COMMUNITY INVOLVEMENT

Goal: Communicate effectively with our employees, customers, community, stakeholders, and the public at large

Economic Development

- Launched LANS's Northern New Mexico Connect Springboard Program, an economic development initiative for entrepreneurs.
- Invested $550,000 in regional economic development via the Regional Development Corporation. This investment included $350,000 for technology maturation outside the Laboratory.
- Implemented the New Mexico Small Business Assistance Program, which provides technology assistance to businesses.

Education Programs

- Awarded $204,000 in scholarships to Northern New Mexico students who will attend University of California schools next year.
- Invested
  - $100,000 in teaching and nursing programs at Northern New Mexico College,
  - $100,000 in an endowment for the Computer Science program at New Mexico Highlands University,
  - $250,000 in educational outreach grants via the LANL Foundation,
  - $100,000 to strengthen the Math & Science Academy, and
  - $100,000 to help create a Regional Quality Center for schools via the LANL Foundation.

Community Giving Program

- Launched collaboration with VolunteerMatch, which links Laboratory volunteers with community needs.
- Created a new giving program known as Virtual Food Bank with Santa Fe Food Depot.
- Matched record-breaking employee contributions to United Way for a total of $1.5 million, more than double the Laboratory's contribution last year. The Laboratory received the "Raise the Roof" award from the United Way of Santa Fe County for its LANS matching fund support.
- Held a successful fundraiser to help expand Española's San Martín de Porres Soup Kitchen.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